REMARKS/ARGUMENTS

In the final Office action dated August 31, 2005, the Examiner rejected claims 1 - 46 and 49 - 50 under 35 U.S.C. § 102 or 35 U.S.C. § 103. By this Amendment, Applicant has amended claims 1, 11, 24, 25, 35, 37 - 42 and 50. Reconsideration and reexamination are hereby requested for claims 1 - 46 and 49 - 50 that are pending in this application.

Response to the § 102 Rejections of Claim 1 - 22

The Examiner rejected claims 1 - 22 under 35 U.S.C. § 102(b) as being anticipated by the article by Sands. Claims 1 and 11 are independent.

The methods of amended independent claims 1 and 14 are directed to modeling the behavior of an optical fiber data channel. Optical fiber channels have distinct characteristics due to the properties of one or more of the laser, the fiber and the photodetector. As a result of these characteristics an optical fiber data channel may exhibit undesirable characteristics such as dispersion and scattering. See, for example, Applicant's Specification at page 2 - 3. There is no teaching or suggestion in the art to use the claimed method for modeling the behavior of an optical fiber data channel. In view of the above, Applicant submits that independent claims 1 and 14 and claims 2 - 10 and 12 - 22 that depend on claims 1 and 11, respectively, are not anticipated by or obvious in view of Sands.

In addition, the dependent claims are patentable over Sands for the additional references that they contain. For example,

claim 12 recites, in part: "accepting a product of the most recent value of the sequence of data input to the data channel and a second most recent value of the sequence of data input to the data channel into a second FIR; and summing an output of the first FIR and output of the second FIR to form the channel model value." Sands does not teach or suggest the claimed method for forming a channel model value. Section 3 of Sands cited by the Examiner (in particular Table 1) describes a comparison of two different FIR models with an FSM model. Here, the two FIR models are not used together. Rather the characteristics of the different models are being compared. Moreover, Sands does not teach or suggest the specific use of multiple FIRs as set forth in claim 12.

Claim 13 recites, in part: "accepting a product of the most recent value of the sequence of data input to the data channel and a third most recent value of the sequence of data input to the data channel into a third FIR; and summing an output of the first FIR and output of the second FIR and output of the third FIR to form the channel model value." Sands also does not teach or suggest this claimed method for forming a channel model value.

Claim 14 recites in, part: "accepting a product, said product being the most recent value of the sequence of data input to the data channel and the two next most recent data input, into a fourth FIR; and summing an output of the first FIR and output of the second FIR and output of the third FIR and output of the fourth FIR to form the channel model value."

Sands does not teach or suggest this claimed method for forming a channel model value.

Claims 15 - 22 relate to updating multiple FIRs. Section 2.6 of Sands cited by the Examiner does not mention multiple FIRs as claimed, nor does it mention updating multiple FIRs as claimed.

Response to the § 103 Rejections of Claim 23 - 50

The Examiner rejected claims 23 - 50 under 35 U.S.C. § 103(a) as being unpatentable over Sakaguchi et al., U.S. Patent No. 4,747,094 (hereafter referred to as "Sakaguchi"), in view of an article by Bellini et al. (hereafter referred to as "Bellini"). Claims 23, 30, 37, 40, 43 and 46 are independent.

Claim 23 is directed to a method for equalizing an optical signal, modulated with a digital signal, received over an optical channel. The Examiner maintains that the limitations of this claim are met by the circuits of Figures 2 and 3. Claim 30 was rejected on similar grounds. Although this is not stated in the Office action, Applicant assumes that the Examiner maintains that the decisions ($\hat{a}_n$) generated by the circuit of Figure 2 are provided to the circuit of Figure 3 thereby teaching the limitation: "providing the decisions to a nonlinear channel estimator".

Applicant explained in its prior submission how Figures 2 and 3 do not interact in the manner claimed in claim 23. In the interest of brevity, Applicant will not repeat that argument here. In response, the Examiner stated that he disagreed and restated his objection.

Upon further analysis, Applicant continues to maintain that Bellini does not teach that the estimating is adapted in accordance with the decisions. For example, the output $\hat{a}_n$ of the detector of Figure 2 is not used to adapt any estimating of the non-linear Volterra Canceller and, in Figure 3, the output $\hat{a}_{un}$ of the NMLSE is not used to adapt any estimating of the NMLSE. Accordingly, Applicant respectfully request that the Examiner specifically identify which elements of Figures 2 and 3 are performing each of the limitations of claim 23.

Similarly, with regard to claim 28 Applicant request the Examiner to identify which specific element in Bellini comprises a look-up table as claimed. From the rejection, Applicant assumes the Examiner is referring to the memory cited at page 937. However, as the passage states this memory is used to store the length of the trellis, not a value of predicted ISI.

In the rejection of claim 37 the Examiner refers to the circuit of Figure 3 as teaching a non-linear MLSE generating the expected values, then refers to the circuit of Figure 2 as teaching computing branch metric based on the expected values. Claim 47 was rejected on similar grounds. However, Bellini does not teach or suggest that the output of Figure 3 is used in the circuit of Figure 2. Hence, Bellini does not teach computing branch metrics based on the expected values as claimed.

Applicant maintains its previous arguments with respect to claims 43 and 46 failing to show analog to digital conversion. Sakaguchi does not discuss such a conversion and, as explained in detail in Applicant's previous filing, the circuitry of Sakaguchi reads on analog signals.

CONCLUSION

Reexamination and reconsideration are respectfully requested.

Respectfully submitted,
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